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(54) Title: POLYMERASE ENHANCING FACTOR (PEF) EXTRACTS, PEF PROTEIN COMPLEXES, ISOLATED PEF PROTEIN, AND METHODS FOR PURIFYING AND IDENTIFYING

(57) Abstract

The invention provides novel extracts, proteins, and complexes that improve the polymerization activity of nucleic acid polymerases. Included within the aspects of the invention are methods for identifying compositions with a polymerase enhancing activity, methods for purifying and using these compositions, and specific extracts, proteins, and complexes that function to enhance polymerase activity. As an example, specifically described is nucleotide and amino acid sequence information for a *Pyrococcus furiosus* PEF (P45), which was used to produce a recombinant PEF.